3

AN
IMPARTIAL INQUIRY
Into the SEAT of the IMMEDIATE ORGAN of SIGHT:

VIZ.

Whether the RETINA or CHOROÏDES.

BEING

The Subject of a LECTURE, in a Courſe
lately given on the Nature and Cure of
the Diſeaſes of the EYE.

To which are annexed,
Five and Forty QUREIES on this Controverted
Subject.

Submitted to the Examination of the CURIOUS.

To which is added,
Some Account of the AUTHOR's Succeſs, and a
Liſt of Writers on the Diſeaſes of the Eye, cited by
him in the Courſe of his Lectures.

By *JOHN TAYLOR*,
*Doctor of Phyſic, Oculiſt to his Majeſty, and
Fellow of the Colleges of Phyſicians in ſeveral
Univerſities in Foreign Parts.*

Qui dat videre, *dat* vivere.

LONDON:
Sold by M. COOPER, at the *Globe*, in *Pater-Noſter-Row*. 1743.
[Price One Shilling.]

TO

Dr. *BURTON.*

SIR,

IT would be an Argument of my being both inſenſible of Goodneſs; and ignorant, or at leaſt, negligent of Merit, were I to heſitate one Moment, whoſe Name to prefix to the following Sheets, ſince the many generous and amicable Qualities of your Nature ſo eaſily direct my Choice of the *Man*; and the uncommon Accuracy and deep Penetration of your Judgment, with equal Diſtinction, point out the *Phyſician.*

IT is therefore with extreme Pleaſure I ſeize the preſent Opportunity of declaring the high Eſteem and peculiar Affection, I ſo juſtly owe

A 2

you; and at the ſame time, it is no ſmall Increaſe of my Satisfaction, to be perſuaded, the whole learned World muſt not only approve my Choice, but conclude the Subject of the enſuing Papers to be, in ſome Meaſure, worthy their impartial Examination, when they ſee them honoured with the Name, and ſubmitted to the Judgment of one, whoſe Extraordinary Abilities and extenſive Knowledge render him an unexceptionable Judge in Controverſies of ſo nice and curious a Nature.

I am,

SIR,

Your moſt Obedient,

Humble Servant,

JOHN TAYLOR.

Great Queen-
ſtreet, Lincoln's-
Inn-Fields,
May 17, 1743.

THE PREFACE.

IT may perhaps be demanded, what End I propoſe by committing this controverted Subject to the Examination of the Publick, ſince ſome may ſay, the Determination of it is at beſt but precarious and uncertain, and even if it were infallibly decided, no extraordinary Advantage could be expected from it.

To which I anſwer, though it has been generally given in Favour of the

Retina, *yet I hope, the Arguments offered in the enſuing Sheets, will be ſufficient, if not to determine it for the* Choroïdes, *at leaſt to render the Claim of the* Retina *equally invalid, though in my Opinion the* Choroïdes, *has a juſt Title to the Pre-eminence.*

About the Beginning of this Century, many Diſputes aroſe concerning this Queſtion, amongſt the French *Writers, and ſince that Time it ſeems to be given up in Favour of the* Retina; *and indeed ſo ſtrong is the Prepoſſeſſion in the Minds of moſt Men, concerning the Right the* Retina *has to the Preference, that I am perſuaded it will be no ſmall Difficulty to eradicate it; though of late Years* St. Yves *has ventured to alledge ſome Arguments on the Side of the* Choroïdes; *but neither he nor his Predeceſſors, have, in my Opinion, been ſufficiently copious to aſcertain*

*the Title either of the one or the other:
I therefore thought it not unneceſſary
to be a little more comprehenſive on
he Subject; and diſplay the Force of
ll the Arguments that ſeem to me to
make for either Side of the Queſtion:
And that I might not pronounce dog-
matically on ſo controverted a Point,
I have ſubjoined to this Enquiry, a
ertain Number of Queries, all of
hem (at leaſt as I think) of very
reat Validity in Favour of the*
Choroïdes.

*As to the Uſefulneſs of this In-
uiry, and the Advantages that
ould follow the bringing it to a fi-
l Deciſion; I believe few will doubt
them, if it be conſidered how much
r Knowledge of the Diſeaſes of
immediate Organ of Sight,
uld be advanced by a certain De-
mination of the Queſtion. It was
th this View, that I judged it
eſſary to introduce the Queſtion in
the*

the Courſe of my Lectures on the Nature and Cure of the Diſeaſes of the Eye, immediately previous to my treating of the Morbific Alterations of the immediate Organ of Sight ; ſince the Diſcoveries, I preſume to have made on the Nature and Cure of theſe Diſeaſes, are in a great Meaſure owing to the diligent and accurate Examination of this important Queſtion.

A

AN
IMPARTIAL INQUIRY
INTO THE
SEAT of the Immediate Organ of SIGHT,
VIZ.
Whether the *Retina* or *Choroïdes*, &c.

BY the immediate Organ of Sight, we underſtand that Part of the Fund of the Globe, which by the Action of the Rays of Light, receives the Impreſſion of viſible and external Objects, which by the nervous Fibres communicate the Ideas to the Mind.

Immediate Organ of Sight defined.

THE Queſtion is whether the *Retina* or *Choroïdes* is that which immediately receives ſuch Impreſſions, and from which the Mind receives it's Ideas?

Queſtion whether the *Retina* or *Choroïdes* be that Organ.

THIS Queſtion, in the laſt Age gave Cauſe to a great Number of learned Diſputes, which I do not find are even to this

Day determined. In the Age we live in, ſome few have attempted to renew the Examination of the Queſtion in Favour of the *Choroïdes.* But the univerſal Opinion of Mankind (without even having taken the Pains to examine this Queſtion with proper Attention, from the general Notion we have of the Uſe of the Nerves) ſeems to have given it in Favour of the *Retina.*

Generally given in Favour of the *Retina.*

I have taken great Pains to examine all that has been ſaid on both Sides of the Queſtion, and find it to be a Matter well worthy of Diſpute, as the Knowledge of it is not a little neceſſary to give us a true Idea of the Diſeaſes of which I am treating.

Firſt Argument in Favour of the *Retina*: That it is an Expanſion of the Optic Nerve.

THUS it may be argued in Favour of the *Retina*, that it is an Expanſion of the Optic Nerve, and conſequently nervous in all its Parts, and therefore it is *that* only, which can be ſuppoſed to be the Seat of the Immediate Organ of Sight; whereas the *Choroïdes* is not a nervous Membrane, and tho' undoubtedly it is not without ſome Nerves, there are many Parts in it, where no Nerves are to be found; and as we all know that Nerves are the Inſtruments of Senſation, in whatever Manner the Impreſſion of Objects are conveyed to the Mind, it is without Diſpute that the Nerves only can be deſigned for that End: Whence follows, that where there are no Nerves there can be no Senſation; and as we have a Demonſtration from our ſeeing every Point of the Object diſtinctly, that every ſuch Point muſt act on ſome Nerve, without which ſuch Points would be loſt to the Sight, it is abſurd to pretend, that the *Retina* is not the Immediate Organ of Sight. —— To which it may be replied,——That tho' the *Choroïdes* is not a nervous Membrane as the *Retina* is, yet it is ſufficiently Nervous, for the Service of Viſion: That it is not neceſſary that the Organ of Sight ſhould be nervous in all its Parts, for if that were true, the *Retina* can no more be the Organ of Sight, than the *Choroïdes*; for the Arteries of the *Retina* are very numerous, many of them conſiderably large, and they are no more ſenſible of the Action of the Light, than the Parts of the *Choroïdes*, where there are no Nerves found; and therefore, as we plainly perceive every Point of the Object, the Argument proves no more for the one than the other: Thus tho' the Order and Number of the Nerves in the *Choroïdes*, cannot be ſuppoſed equal to thoſe in the *Retina*, yet it is not ſufficient to prove the *Retina* to be that Organ. But there are a vaſt Number of other Arguments, which may be offered in Favour of the *Choroïdes*, of infinitely more weight, than what I have ſaid in Favour of the *Retina*.—For wherever we place the immediate Organ of Sight, we muſt indiſpenſably allow an immediate Communication be-

Anſwer.

Arguments in Favour of the *Choroïdes.*

Communication between the Nerves of the immediate Organ of Sight, and thoſe of the *Iris*, that move the *Pupil*.

tween the Nerves of that Organ and thoſe of the *Iris*, which give Motion to the *Pupil*: For every one knows, that not only in a healthful Eye, we plainly perceive the *Pupil* change its Diameter in the different Degrees of Light, but alſo in many Diſeaſes of the Organ of Sight, the *Pupil* loſes its Movement in Proportion, as the Sight loſes its Perfection; ſo that in ſuch Caſes, by examining the Movements of the Pupil, we may judge, with the greateſt Exactneſs, the Degree of the Imperfection of the immediate Organ of Sight, without any previous Knowledge of the Eye. And we find, that in the laſt State of ſuch Diſeaſes, when the Eye is no longer ſenſible of Light, the *Pupil* remains immoveable, whether dilated or contracted: Now it is certain, that notwithſtanding theſe nervous Fibres the *Retina* has no Communication with thoſe of the *Iris*; and even ſuppoſing, that there were any Fibres continued from the Extremities of the *Retina*, they are ſo very fine, that as yet, I think I may ſay, they have eſcaped all Anatomical Enquiries; and could ſuch Nerves be diſcovered, they certainly are not thoſe deſigned for the Movements of the *Pupil*, for they evidently take their Origin from thoſe Branches of the Nerves, that are continued on the Surface of the *Choroïdes*, in or about the horizontal Line of the Globe, (as I ſhall ſhew hereafter.) Therefore as there is an indiſpenſable Neceſſity of an

No Communication between the Nerves of the *Retina* and *Iris*.

an immediate Communication between the Nerves of the Immediate Organ of Sight, and thoſe of the *Iris*; and the *Retina* evidently has not that Communication, it ſeems to carry a Demonſtration in Favour of the *Choroïdes*: And we may farther prove the Neceſſity of this Communication, by obſerving ſome few Particulars relating to the voluntary and involuntary Changes that happen in the *Pupil*, in the different Degrees of Light, for in a healthful Eye, we cannot voluntarily dilate the *Pupil* in any greater Degree of Light than the ordinary, nor contract it in any Degree leſs. But we can voluntarily dilate the *Pupil* in every leſſer Degree of Light, than the ordinary Degree, but not contract it in the ſame Degree of Light: all which demonſtrates, that Light is the immediate Cauſe of the Changes of the *Pupil*. Now, were there no Communication between the immediate Organ of Sight, and the Nerves which move the *Pupil*, it is hard to conceive how Light acting on the immediate Organ of Sight, can produce thoſe Changes in the Movements of the *Pupil*: Thus to return to what has been ſaid in Favour of the *Retina*, from the difference between its Nerves, and thoſe of the *Choroïdes*; admitting, that the Nerves, which give the Movement to the *Pupil* (which I think cannot be diſputed by any) come from the *Choroïdes*, and that the *Retina* has no Communication with the *Iris*, it follows, if the Nerves, which

Light the immediate Cauſe of the Changes of the *Pupil*.

which are continued from the *Choroïdes*, and enter the *Iris*, are ſufficient to occaſion theſe regular Movements of the *Pupil*; it is not eaſy to conceive why they cannot be equally ſufficient for Viſion.—That theſe Changes of the *Pupil* in a healthful Eye; and Loſs, or defect in its Movements, are owing to the Nerves of the *Choroïdes* and thoſe of the *Iris* being one and the ſame Nerves, is evident; and what farther confirms this, is, that in thoſe Diſeaſes where the *Iris* adheres in part to the *Cornea*, that Part which is free, however ſmall, has ſome Movement in the different Degrees of Light, when the Sight is not loſt; and on the contrary, when the Sight is loſt, it always remains without any viſible Movement.

Neceſſity of Communication between the immediate Organ of Sight, and Nerves that move the *Pupil*, further demonſtrated.

OTHER Arguments may be drawn, each of which would be a Demonſtration of the Neceſſity of a Communication between the immediate Organ of Sight, and thoſe Nerves that give Movement to the *Iris*: Such as, that painful Senſation which ariſes from Light in ſome of its Diſeaſes, by which we find, that the *Pupil* is always much more contracted than we obſerve it to be in a healthful Eye in the ſame Degrees of Light; and that in Proportion to this Pain, the Contraction is greater, and that in ſuch Caſes, the Patient has no Power to dilate the *Pupil* in any Degree of Light, leſs than the ordinary, as we have in a healthful Eye. How then could it be poſſible to conceive, how this Contraction of the *Pupil*, ſhould be greater in the ſame Degree of Light, when the Eye has no Appearance of Inflammation, unleſs from the diſeaſed Alteration of the Nerves of the immediate Organ of Sight? And how could this greater Contraction of the *Pupil* happen, when the Nerves of the immediate Organ of Sight, are thus diſeaſed, unleſs thoſe Nerves in the *Iris* were equally affected with thoſe of that Organ? For though it may be ſaid (where there is an Inflammation in the Globe, whether in the external or internal Veſſels, or both, where the Arteries that nter the *Retina* are fuller than in their ealthful State) we may eaſily conceive, ow in ſuch Caſes the *Pupil* ſhall be more ontracted in a Degree of Light leſs than hat of the Pupil in the healthful Eye; and lſo how this Pain is augmented from the aſt Increaſe of the Light, by conſidering he Compreſſion that may be made on the Nerves of the *Iris*, from ſuch a *Plethora* of he Blood Veſſels and the Reſiſtance theſe Nerves might meet with, in their Office of ſiſting towards the Movements of the *Pu-l*: But in the Caſe we ſpeak of, this could t be the Cauſe, there being (as I have ſaid) Inflammation, for this muſt neceſſarily owing to ſome particular Defect in the

Nerves of the immediate Organ of Sight themſelves, and therefore whatever that Defect is, it muſt neceſſarily be continued to the Nerves of the Pupil, and demonſtrate (as I have obſerved) the Neceſſity of this Communication.—A farther Confirmation of this Argument, is the Pain, and ſudden Contraction that affects the *Pupil* of an healthful Eye in any increaſed Degree of Light, falling ſuddenly into the Eye; and that Dilatation of the *Pupil* in any ſudden diminiſhed Degree of Light, which certainly could not happen, unleſs the Nerves of the immediate Organ of Sight, and thoſe of the *Iris*, had an immediate Communication. Nay, this is demonſtrable in that painful Senſation we daily obſerve going out of a dark into a light Place; and the Imperfection of our Sight which follows it: For the Pain of the former, is owing to the ſudden Contraction of the *Pupil*, and the Confuſion of the Sight in the latter, from the *Pupil's* not being ſufficiently dilated, and the Slowneſs with which it dilates from going ſuddenly out of a Degree of Light, where ſuch a Dilatation was not neceſſary, and therefore it will be extremely difficult to account how (unleſs we allow of ſuch a Communication) this ſudden and great Degree of Light, could occaſion ſuch a ſudden and great Contraction of the *Pupil*;——Or how this Confuſion of Sight and the Time it con-

Pain and Contraction of the *Pupil*, on an Increaſe of Light in an healthful *Eye*.

tinues, conſequent on the *Pupil's* Dilatation, and the Slowneſs with which it dilates could poſſibly have happened. But, above all, is the Inſenſibility of the *Optic-Nerve,* on its Entrance into the Organ, as appears by a well known Experiment: For notwithſtanding what may be ſaid from the Number of Blood Veſſels that enter with the Optic-Nerve into the Globe; if we conſider the Manner in which they enter, it does not ſeem to be any Argument for their Inſenſibility. For were the Nervous Fibres themſelves ſenſible of Light, it is certain that there is a ſufficient Number in their Entrance, that muſt be expoſed to ſome Light falling upon them; and ſince they are not ſenſible of any Rays of Light, it ſeems to prove plainly, that the Nervous Fibres (of which the Optic-Nerves are compoſed) are inſenſible of Light, and that the *Retina* being a Continuation of the ſame Fibres, muſt neceſſarily be as inſenſible of the Action of Light as the Optic-Nerve itſelf.

Retina being ſenſible when wounded, and yet having no Senſation of Light, no Argument if granted.

THAT the *Retina* may be found ſenſible when wounded, and yet entirely inſenſible of the Action of Light, may be admitted without proving any thing in Favour of the *Retina,* though I think this is even greatly to be doubted, ſince we find that we daily wound the *Retina* in the Operation for the *Cataract,* with little or no Pain, and without any ill Conſequence, Nay, Experience teaches us, we may wound the Globe with the *Retina* twenty Times together in different Parts of it, and if we avoid wounding thoſe Nerves, which traverſe the Horizontal Part of the Globe, and are deſign'd for the Service of the *Iris*, there will not follow even a common Inflammation: But there is nothing more confirms the Certainty of the *Choroïdes* being the immediate Organ of Sight, than that Blindneſs and Immobility of the *Pupil*, which follows a Wound made in any of the Branches of thoſe Nerves in their Paſſage in or about the Horizontal Line of the Globe, and whoſe Extremity is loſt in the *Iris*, as it very often happens in the ordinary Operations for the *Cataract*: I mean when this is the Caſe (as it very often is,) without any other Symptom, than that of continual Pain in the Globe, Temple, and the ſame Side of the Head. Now allowing the *Retina* to be the Immediate Organ of Sight, it would be difficult to account how this Blindneſs could be brought on; for the *Retina* being independent of the *Choroïdes*, and there being in this Caſe no Inflammation conſequent on the Wound made in the *Choroïdes*, the *Retina* could not ſuffer from ſuch a Wound, and if it be ſaid that the Pain in the Head might occaſion thoſe Blood Veſſels, that are continued thro' the Optic Nerve, to be ſo diſtended, as to deſtroy the Senſation of the Nervous Fibres, and conſequently

Blindneſs and Immobility of the *Pupil*, from wounding the Nerves in Couching the *Cataract*, a great Argument for the *Choroïdes*.

conſequently thoſe of the *Retina*; it may be replied that neither the Pain is alleviated by Bleeding, nor the Sight preſerved; the latter at leaſt muſt be, were the *Plethora* of the Blood Veſſels in or about the Optic-Nerve, the Cauſe: Whereas, allowing the *Choroïdes* to be the Immediate Organ of Sight, we may eaſily account how the Brain may be affected in or about the Organ of the Nerves thus wounded; and how the Extremities of thoſe Nerves in the *Iris*, together with thoſe continued in the *Choroïdes* may become inſenſible. Thus the Arguments in Favour of the *Choroïdes* ſubſiſt in all their Force.

Tho' the *Retina* be ſenſible of Wounds, yet it ſeems inſenſible of Light.

BUT even admit that the *Retina* is ſenſible when wounded (tho' I think from what I have ſaid, it is almoſt demonſtrable, that it is not ſo) the Tranſparence, which its Nervous Parts evidently have in a healthful Eye, ſeems to prove, that it is inſenſible of Light, or at leaſt from ſuch a Tranſparence, it is evident the Light having a Tranſition to the *Choroïdes*, the *Retina* cannot be ſuppoſed to receive the Impreſſions of Objects; for it cannot be ſaid that in a Looking-glaſs, the Objects we ſee, are impreſſed on the Surface, or any of the tranſparent Part of the Glaſs; therefore the *Choroïdes* ſeems to be that, which reſiſts the Paſſage of the Rays (as the Silver does in the Glaſs) and by Conſequence, *that* only can be the Immediate Organ of Sight: Nay, even ſuppoſing

Example of a Looking-glaſs

that

that the *Retina* has ſome little Opacity, even as it appears when taken out of the Eye, this Opacity is not ſufficient to reſiſt the Paſſage of Light to the *Choroïdes*, tho' perhaps it may paſs with leſs Freedom than through a Body perfectly tranſparent; and what ſeems to confirm this, is the Colours of the *Choroïdes*, or rather *Uvea* in Animals; for it is evident, that Animals by the Colour of their *Choroïdes*, ſee Objects that are moſt proper for their Support; that they ſee thoſe Objects with leſs Light than Man; that any Degree of Light greater than the ordinary gives them Pain; that we ſee them in a great Light cloſe their Eye-lids, and that their Sight is leſs diſtinct than that of Man, is certain; and all theſe Differences are undoubtedly owing to their *Choroïdes* being coloured, and ours black: Now if the *Retina* in us is the Immediate Organ of Sight, it is undoubtedly ſo in them; for if the *Retina* were not ſufficiently tranſparent for the Paſſage of the Light, how could theſe Animals be ſenſible of thoſe Differences? And if we admit ſuch a Tranſparency, how can the *Retina* be ſaid to be the immediate Organ of Sight, that is to receive the Impreſſions of every part of the Object, when at leaſt a ſufficient Number of the Rays reflected from the Object thus evidently paſs the *Retina* and fall upon the *Choroïdes*?

Different Colour of the *Choroïdes* in Animals.

Anſwers to all that has been ſaid in Favour of the *Choroïdes*, and firſt to the Concluſions drawn from the Loſs of Sight conſequent on wounding the Nerves of the *Iris*.

To all that has been ſaid in Favour of the *Choroïdes* it may be replied, firſt with Regard to the Loſs of Sight, conſequent on a Wound made in the Nerves, deſigned for the Service of the *Iris*, that this could not happen, were the *Retina* the immediate Organ of Sight, from its being independent on the *Choroïdes*, and more ſo from there being no Inflammation conſequent on this Wound, it may be anſwered, that the Pain in the Head ariſing from the Wound, might occaſion theſe Blood Veſſels in or about the Optic-Nerve, to be ſo diſtended, as to hinder the Tranſmiſſion of Nervous Supplies to the *Retina*; nor is the Argument of the Inſenſibility of the Brain, and conſequently of the *Choroïdes*, of more Force; ſince the ſame may be ſaid with equal Juſtice of all the Nerves immediately after their Egreſſion from the Brain; and I believe no one would imagine, that the fine Fibres of the Nerves ſhould be ſenſible, and yet that Part of the Nerves from which they are continued ſhould be void of Senſibility.

Immediate Organ of Sight, muſt neceſſarily be more Nervous than the *Choroïdes*.

THAT it is eſſentially neceſſary, that the immediate Organ of Sight ſhould be more nervous than the *Choroïdes* really is, appears in that Diſeaſe of the Organ of Sight call'd *Muſcæ Volantes*, which is demonſtrated to be a Vice in the Arteries of the *Retina*, and we know this Vice neceſſarily muſt be a preternatural Diſtention of the Arteries: Now ſince the Effect of ſuch a Diſtention, can be nothing more than hindring a proportionable Number of the Points of the Object falling on the Nervous Part of the immediate Organ of Sight; and that we plainly ſee, that the imaginary Objects always anſwer to the Number of Parts of the Object thus loſt; we muſt conclude, that in a healthful Eye, every Part of the Object does fall on ſome nervous Part. It not only follows from hence, that the *Choroïdes* cannot be the immediate Organ of Sight, from the many Parts we find in it, where no Nerves can be diſcovered, but entirely removes that Objection that pretends to prove the *Choroïdes* ſufficiently Nervous for Viſion. As to what has been ſaid about the Neceſſity of a Communication between the Nerves of the immediate Organ of Sight, and thoſe which give Motion to the *Iris*, it will not be very difficult to remove that Objection; for, if we allow the Nerves of the *Iris* are indiſtinct from thoſe of the immediate Organ of Sight, we admit that the *Retina* may be that Organ. For the Proof of its being ſo, as to all the Objections touching this Difficulty of accounting for all the Changes of the *Pupil* in a healthful and diſeaſed Eye, wholly depends upon making it appear how they are brought about; in order to which, we ſhall obſerve, that the ſeveral Degrees of the Contraction of the *Pupil*, which follow every

Anſwer to the Arguments taken from the Communication of the Nerves of the immediate Organ of Sight, and thoſe of the *Iris*.

Degree of Light greater than the ordinary Degree; together with that painful Senſation which attends any Degree of Light falling ſuddenly upon the Eye, greater than the ordinary Degree; and that painful Senſation (which is much the ſame) which affects the Eye going out of an obſcure Place ſuddenly into great Light, may be eaſily accounted for, by conſidering that tho' we do allow the *Retina* to be ſo ſufficiently opaque, as to make that Reſiſtance to every Point of the Object which is neceſſary to receive its Impreſſions; yet not ſo as to hinder the Light from affecting the *Choroïdes*, and thus the Nerves of the *Choroïdes* night be ſo affected with the Action of Light, as to communicate its Effects to the Extremities of the ſame Nerves in the *Iris*. Thus when the Light does fall in a greater Degree than in the ordinary Degree, as there alls a greater Quantity on the *Retina*, ſo here falls a greater Quantity on the *Cho- oïdes*, and according to its entring more or eſs ſuddenly, the Senſation muſt be propor- ionable, and thus the Extremities of thoſe Nerves in the *Iris* muſt ſuffer with thoſe Parts of the *Choroïdes* from whence they are ontinued; and in like Manner when it en- ers in a leſſer Quantity, there muſt be a roportionable Loſs of that Senſation which hey received in the ordinary Degree of ight; and thus theſe Extremities of the

Iris ſuffer a proportionable Change; whence follows that Loſs of Contraction and Degree of Dilatation, which the ſame Degrees of Light cauſed.

How the *Pupil* loſes its Mobility in Proportion to the Loſs of Senſibility of the immediate Organ of Sight.

AND we may from hence eaſily comprehend how the *Pupil* in ſome of the Diſeaſes of the immediate Organ of Sight, ſhall loſe its movements in proportion to the Degree of Inſenſibility in the immediate Organ of Sight; and in the laſt State, why it ſhall remain immoveable: All which may be accounted for (without allowing the *Choroïdes* to be the Immediate Organ of Sight) by remembering that thoſe Diſeaſes where the *Pupil* remains immoveable, always come from a Diſtenſion of one or more of the Arteries in or about the Optic Nerve, as appears by ſeveral of its Symptoms, particularly by thoſe ſpecies of thoſe Diſeaſes, which are accompanied in their Progreſs with Pain, or with the *MuſcæVolantes*; the firſt attended with Inflammations of every Kind, where the Arteries of the Globe are viſibly affected; the laſt where there is an Augmentation in the Diameters of the Arteries of the *Retina*, as I ſhall hereafter make appear. There is in both theſe Caſes an Augmentation either in thoſe Parts of theſe Arteries, which paſs in or about the Optic Nerves, and by Conſequence, thoſe Nerves, which are continued along or about the Optic Nerve, and whoſe Extremities are employed in the Service of the *Iris*, muſt from their Situation ſuffer an equal Degree of Preſſure with the Fibres of the Optic Nerve itſelf: For ſince the Optic Nerve, together with theſe Fibres, are with the Arteries we now ſpeak of, all incloſed by the *Pia* and *Dura Mater*, and as the *Dura Mater*, from its natural Texture, cannot ſuffer any Change in its Diameter from any Reſiſtance poſſible from the Augmentation of ſuch Arteries, it follows (as I ſhall more fully explain ſpeaking of the Cauſes of theſe Diſeaſes) that all the nervous Fibres contained within the Surface of the *Dura Mater* muſt ſuffer an equal Degree of Preſſure; and thus the Nerves whoſe Extremities are employed in the Service of the *Iris*, together with thoſe of the *Retina* muſt ſuffer the ſame Degree of Alteration, and hence it is demonſtrable how the Nerves of the *Retina*, as being the immediate Organ of Sight, are accompanied with the ſame Alteration as the Nerves of the *Iris*; and thus we ſee how the *Pupil* loſes its Movements in Proportion to the Defect in the *Retina*; and how in the laſt State, when the *Retina* is no longer ſenſible of Light, the *Pupil* ſhall remain immoveable. It is therefore evident whether we do or do not admit the *Retina* to be the immediate Organ of Sight; the Argument drawn from the Alterations of the *Pupil* from the Action of Light in a

healthful

Alterations of the *Pupil* in an healthful, and Defect of its Mobility in a Diſeaſed Eye proves nothing for the *Choroïdes*.

healthful Eye, with the Defect in its Movements, and at laſt its immobility, proves nothing in Favour of the *Choroïdes*, as to thoſe Diſeaſes, where the *Pupil* does maintain its Movements when the Eye is inſenſible of Light: Each one ſeems to carry with it a Demonſtration that the *Choroïdes* cannot be the immediate Organ of Sight; for this Mobility that remains in the *Pupil*, when the Eye is blind, plainly proves that the Nerves of the *Iris* are entirely independent of the immediate Organ of Sight: Now if the Nerves of the *Choroïdes*, and thoſe of the *Iris* be the ſame Nerves, as it is ſaid in Favour of the *Choroïdes*; allowing the *Choroïdes* to be the immediate Organ of Sight, when the Nerves of the *Choroïdes* are become inſenſible, the Extremities of theſe Nerves in the *Iris* muſt neceſſarily ſuffer the ſame Alteration; and thus when the Immediate Organ of Sight is ſo diſeaſed, the Movements of the *Pupil* muſt be proportionably imperfect, and when it becomes inſenſible of Light, the *Pupil* muſt remain without Movement; and therefore ſince in the Diſeaſes where the *Pupil* does not remain without Movement, it is plain, that if the *Choroïdes* is the immediate Organ of Sight, the Nerves of the *Choroïdes* muſt be independent of thoſe of the *Iris*, which no one yet has pretended to ſay; it follows therefore that the *Choroïdes* cannot be this Organ, whereas if we allow the *Retina* to be the im-

immediate Organ of Sight, we may as eaſily account how the *Retina* may become inſenſible, without intereſting thoſe Nerves which are employed in the Service of the *Iris*, as where they ſuffer the like Alteration. For I ſhall ſhew that all theſe Alterations do not proceed from any Augmentation of the Diameter of the Arteries in and about the Optic Nerve, but from ſome Defect in the Brain, in or about the Origine of the Nerves of the immediate Organ of Sight, and thus the Nerves of the Optic Nerve, and by Conſequence the *Retina* may ſuffer, without being accompanied with any Alteration of theſe Nerves, which (as we have ſaid) are continued in and about the Optic Nerve, and whoſe Extremities are loſt in the *Iris*; and as a further Proof that the Nerves of the *Pupil* are independent on the immediate Organ of Sight, there are many Examples where the Eye is blind, and the Patient has a voluntary Power to dilate the *Pupil*; nay there are ſome, whoſe immediate Organ of Sight is likewiſe inſenſible of Light, who yet have a voluntary Power both to contract and dilate the *Pupil*, which could not happen (for the Reaſons already given) were the *Choroïdes* the immediate Organ of Sight, from the Neceſſity of the Dependance of the Nerves of the *Choroïdes* on thoſe of the *Iris*. Beſides we have many Inſtances, where the *Pupil* is naturally ſmall, and abſolutely without Movement, and yet the im-

Theſe Alterations are not the Effect of a Diſtention of the Arteries, but of a Defect in the Brain.

Pupil ſmall and motionleſs, and yet immediate Organ of Sight in an healthful State.

immediate Organ of Sight in its healthful State: Nay, when the *Pupil* is not only without Movement, but exceeding ſmall, and of a very irregular Figure, and ſometimes when there are two or three *Foramina* or *Pupils* in the *Iris*, all which I have ſeen from the Effects of a Puſtule or Abſceſs in in the Small Pox, having happened in ſome of the interior Parts of the *Pupil*, where it has made ſuch an Alteration in the Direction of its Fibres, that by the remaining Cicatrice they are ſo interlaced one with the other as to form theſe *Foramina*, and yet the Patient ſees with the ſame Perfection in every Reſpect, as where the *Pupil* has its healthful Form and Movements: A Proof of this is alſo evident from the Succeſs of that Operation which we call an artificial *Pupil*, or a Hole in the *Iris*, where the *Pupil* remains not only much larger than natural, but alſo irregular in its Figure, and abſolutely without Movement, and yet the Patient continues to have a very uſeful Sight in a determined Degree of Light, all which ſhows that the Nerves of the *Iris* are ſo far from being dependent on the immediate Organ of Sight, that neither the Movements, Diameter, or Figure of the *Pupil* are eſſential to our ſeeing Objects. We ſhall further demonſtrate this Truth from the Dilatation and Want of Movement, that we perceive daily in the *Pupil* of the *Myopes*, and yet it is not doubted but they ſee at a certain Diſtance with all the Degrees of Perfection. As to what has been ſaid in relation to the Inſenſibility of the Optic Nerve at its Entrance into the Globe, it appears, that carries as little Argument as the preceding, for the Direction in which the Arteries enter the Globe, with the Optic Nerve conſidered with their number and Diameter, is more than ſufficient to prove the Reaſon of this Inſenſibility; for the ſeveral Parts of the Optic Nerve ſeparate on all Sides for the Formation of the *Retina*, and the Arteries immediately before this Separation are ſo large and ſo cloſely interwoven, that we may eaſily conceive how they may hinder the Light from acting upon its nervous Fibres. More might be ſaid to favour the Reaſon of this Inſenſibility, from the Difference between the Fibres of the Nerves when in the Form, as they are in the Optic Nerve, and when in the *Retina*; but what I have ſaid appearing already ſufficient, I ſhall proceed to anſwer what is ſaid relating to the Inſenſibility of the *Retina*, from Wounds made in the Globe and *Retina*, as n the Operation for the *Cataract*, or otherwiſe we may allow the Senſibility of the *Retina*, and yet eaſily comprehend why no ll Accidents ſucceed ſuch Wounds, and why they ſhould ſucceed Wounds in the Nerves deſtined for the Service of the *Iris*, from

Anſwer to the Arguments drawn from the Inſenſibility of the *Retina* from Wounds.

from the exceeding Fineneſs of the nervo Fibres of the *Retina*, and the conſiderab Bigneſs of thoſe Branches deſigned for tl *Iris*, in their Paſſage in or about the hoi zontal Line of the Globe: As to what h been ſaid relating to the Colour of the *Ch roïdes* or rather *Uvea* in Animals, th proves nothing more in Favour of the *Ch roïdes* than any of the preceding Argument for we have already allowed, the *Retina* do permit ſufficient Light to paſs through it t the *Choroïdes*, but yet it affects the *Retina* o its Paſſage ſufficiently to anſwer the End c Viſion.

Other Animals from the different Colour of *Choroïdes* ſee Objects with leſs Light than Men.

THUS, tho' the Colour of the *Choroïde* in Animals is undoubtedly inſtrumental t their ſeeing Objects with leſs Light thai Men, and to be particularly ſenſible of thoſ Objects, which are neceſſary to their ſupport, this does not prove that the *Choroïdes* is the immediate Organ of Sight all that is proved from this Colour of the *Choroïdes* is, that the *Retina* is, by the Reflection of the Light ſtriking on this Colour of the *Choroïdes*, made more ſenſible oi the Impreſſion of ſuch Objects; and thus we may comprehend how theſe Animals ſuffer Pain in that degree of Light, which is moſt neceſſary to the Perfection of Sight in Man; and how they ſee with leſs Light and leſs Perfection than Man: beſides were it neceſſary, it might be added, that admitting this Colour of the *Choroïdes* in Brutes, as an Argument in Favour of the *Choroïdes*, it certainly cannot be ſo in Man: For as it is black in Man, it cannot eaſily be ſuppoſed proper to receive the Impreſſion of Images, from the particular Quality that black has to abſorb the Rays of Light, which ſeems to preſent a Difficulty in Favour of the *Retina*, much greater than the Colour of the *Choroïdes* in Animals, does in Favour of the *Choroïdes*.

Every Part of the *Retina* a Point directed towards the *Axis* of the Eye.

WE might indeed add many other Arguments in Favour of the *Retina*, drawn from hat curious Obſervation, which we have earned by Glaſſes, of every Part of the *Retina* being a Point directed towards the *Axis* of the Eye, which ſeems to inſinuate how the Points of the objects are impreſſed on the *Retina*, and I believe we have no Experience of the like Obſervation with Repect to the *Choroïdes*.

THERE is another Objection which ſeems ery much to favour the *Retina*, which is hat immediate Communication, which we an prove between the *Filaments* of one Eye and thoſe of the other; and the Neeſſity of ſuch a Communication for ſeeing with both Eyes, one and the ſame Object.

Inſenſibility of the *Pia Mater*.

THERE is yet one Argument more I muſt not forget, which is, that the *Pia Mater* from whence, the *Choroïdes* is ſuppoſed by ſome to be continued, is proved to

be inſenſible, and conſequently the *Ch*
roïdes muſt be the ſame: But admitting tl
Choroïdes is not continued from the *Pia M*
ter, it ſeems evident that it is not ſenſibl
even from the ſame Experiment offered
ſhew the Inſenſibility of the *Retina*:
mean that of wounding the Globe in tl
Operation for the *Cataract*; becauſe tho'
has been ſaid in Favour of the *Retina*, fro
the exceeding Fineneſs of its Parts, why n
Conſequences follow ſuch Wounds; tl
ſame cannot be ſaid in Favour of the *Ch*
roides from the great Difference between tl
Thickneſs of the one and the other; and
it be allowed, that no ill Conſequences fo
low ſuch Wounds in the *Choroïdes* from i
Deficiency of Nerves, it is giving up th
Queſtion in Favour of the *Retina*.

Senſibility of the Nerves deſtined for the Movement of the *Pupil* in thoſe Species of *Gutta Serena* which proceed from a Defect in the Brain.

THE laſt and indeed the greateſt Argu
ment in Favour of the *Retina*, is that draw
from the Senſibility of the Nerves of the *I*
ris and *Uvea*, deſtined for the Movemen
of the *Pupil*, in all thoſe Species of the *Gut*
ta Serena which proceed from a Defect i
the Brain; for were the *Choroïdes* the im
mediate Organ of Sight, it would follow, it
Nerves cannot be affected without thoſe o
the *Iris* and *Uvea* equally ſuffering, ſinc
theſe latter are a continuation of the former
and as the *Pupil* retains its Mobility, whe
the immediate Organ of Sight is no longe
ſenſible of the Object; it follows that th
Retina

Retina, (whoſe Nerves have no Communication with the *Iris*, as thoſe of the *Choroïdes* have) muſt be the immediate Organ of Sight.

Uſe of the *Choroïdes.*

Upon the whole, if it appears from hence that the *Retina* is the immediate Organ of Sight, it follows that the Uſe of the *Choroïdes* is not only to abſorb the Light, after it has produced its effects in the *Retina*, but alſo not to permit it to paſs beyond it, and it is from the Light being thus hindred from acting too violently that the Perfection of Sight depends in the Eyes of Men, and ſome Animals; and in thoſe Animals whoſe *Choroïdes* is coloured, its Uſe is not only to impower ſuch Animals to ſee with a leſs Degree of Light, but alſo to render their Sight more ſenſible of the Impreſſions of ſuch Objects, as are immediately neceſſary to their Preſervation.

Anſwers to Arguments brought for the *Retina.*

Notwithstanding that the Arguments I have offered in Favour of the *Retina*, will undoubtedly appear to every one who has not accurately examined this Queſtion, to determine it in Favour of the *Retina*, yet I have ſtill ſome Arguments left to remove all thoſe of any Weight that have been offered againſt the *Choroïdes*, and to proceed in my Anſwer in the ſame Order they are wrote; I repeat that it is not neceſſary that he immediate Organ of Sight ſhould be more nervous than the *Choroïdes* is, for the Reaſons already given in Favour of the *Choroïdes*; and as to the Argument drawn from

No Neceſſity for the immediate Organ of Sight being more nervous than the *Choroïdes*.

Anſwer to the Arguments drawn from the *Muſcæ Volantes.*

the *Muſcæ Volantes*, we admit that they a produced from a preternatural Diſtention o the Arteries of the *Retina*; yet we abſolutely deny that to be an Argument of th *Retina* being the immediate Organ of Sigh for every particular with Reſpect to the Deficiencies of the Impreſſions of the Object with its Conſequences from thoſe Pencils o Rays being loſt, whoſe Points fall on thoſ diſtended Arteries, may be equally ſaid i Favour of the *Choroïdes*: For whether th Object is impreſſed on the *Choroïdes* or on th *Retina*, theſe Arteries prove an Impedimen to their impreſſing the Image as well on th one as the other: nay this Imperfection o the object ſeems rather an Argument in Favour of the *Chroïdes* than the *Retina*, becauſe it would be much eaſier to account how theſe Arteries by being ſituated immediately before the *Choroïdes*, ſhould hinder, in Proportion to their Diameter, the Parts of th Pencils of the Rays falling on the *Choroïdes* whereas allowing the *Retina* to be the immediate Organ of Sight, it will not be eaſy to conceive, how thoſe Parts of the Object are diſtinctly impreſſed where ſuch Arteries are not, if we conſider that ſuch a Diſtention of the Arteries, by bringing their Surface's nearer one to the other, muſt neceſſarily ſo compreſs the nervous Fibres ſituated between their Surface, as proportionably to deſtroy that Senſation neceſſary to Viſion: and ſince Experience teaches us, that all who complain of *Muſcæ Volantes* before their Eyes, ſee every other Object with a healthful Diſtinction, this Perfection of the Impreſſion of the Object, where ſuch *Muſcæ Volantes* are not ſeen, joined to the Neceſſity of allowing theſe *Muſcæ Volantes* to ariſe from the Diſtention of theſe Arteries of the *Retina*; ſeems to offer a powerful Argument that the *Retina* cannot be the immediate Organ of Sight.

No Neceſſity for the immediate Organ of Sight to be nervous in all its Parts.

As to what has been ſaid about the nervous Parts of the *Retina* being ſufficient to receive all the Points of the Object, as being evidently more nervous than the *Choroïdes* and by conſequence more capable of Viſion, it proves no more than the preceding Arguments; for we have already made it appear, that the Arteries of the *Retina* cannot fail even in an healthful Eye (from their Bigneſs, Number and Situation) to hinder many of the Points of the Object from falling on the nervous Fibres, and ſince we do evidently ſee the Object diſtinctly, it plainly proves that, which ever is the immediate Organ of Sight, it is not eſſential it ſhould be nervous n all its Parts, ſo that ſince we perceive it s not neceſſary it ſhould be nervous in all its Parts, we cannot know to what Degree it hould be nervous, and therefore the *Cho-roïdes* (for all this Argument) may be as ufficient for this End as the *Retina*.

In Anſwer to all that has been ſaid re-ating to the Independency of the Nerves of the

Anſwer to the Independency of the Nerves of the *Iris* on thoſe of the immediate Organ of Sight.

the *Iris* on thoſe of the immediate Organ of Sight, and by Conſequence, that all the Arguments we have urged to prove the Neceſſity of a Communication between the Nerves of the *Choroïdes* and thoſe of the *Iris* are without Foundation: We reply, that ſince theſe Arguments are all taken from a Suppoſition that the *Retina* may receive the Impreſſion of the Object, and yet tranſmit ſufficient Light to the *Choroïdes* to produce all theſe Appearances in a healthful Eye; and from ſuppoſing that the Nerves of the *Choroïdes* may ſuffer in ſome of theſe Diſeaſes of the immediate Organ of Sight the ſame Alteration with thoſe in the Optic Nerve: From whence all theſe Appearances proceed in a diſeaſed Eye, it will not be very difficult to prove, that theſe Obſervations however curious, are not ſufficient to give the Preference to the *Retina*, for it ſeems abſolutely impoſſible to conceive how a Body, even with the Tranſparency that is allowed in Favour of the *Retina*, ſhould be capable to receive the Impreſſion of the Object, and at the ſame time permit the Tranſition of Light to the *Choroïdes*, if we remember that the Laws of Optics teach us, that the Rays ſent from every Part of the Object, muſt meet in the ſame Number of Points, to impreſs the diſtinct Image of ſuch Object: Now if any Number of theſe Points paſs to the *Choroïdes*, it follows that we muſt loſe a Proportion of the Diſtinction of ſuch Objects; ſince ſuch Points, which thus fall, muſt be abſolutely wanting to the Perfection of ſuch Impreſſion; and to ſay that the *Retina* may receive the Impreſſion of the Objects diſtinctly, and yet tranſmit the Light to the *Choroïdes*, ſeems abſurd, not only from there being only one Point where any one Point of the Object can be diſtinctly impreſſed, but from the Conſequence that muſt follow ſuch a double Impreſſion, with Reſpect to the Perfection of Viſion: That the *Retina* and *Choroïdes* both ſeem to receive diſtinctly this Impreſſion from the common Experiment of a Candle held at a proper Diſtance from the Eye, we do not deny; but then we are to make a great Difference (as I have ſaid) between the Tranſparency of the *Retina* in a living Eye, and when dead: For tho' from its Opacity when dead it does receive the Impreſſion of the Image, it is very much to be doubted, if it be capable of doing ſo when living; and without any Regard to the Difference of Colour between the *Retina* and *Choroïdes* we always find, that the Impreſſion of the Image is more diſtinct in the *Choroïdes* than the *Retina*.

Anſwer to the Argument drawn from the Progreſs of the Nerves of the *Iris*.

As to the other Argument, I mean that from the Progreſs of theſe Nerves deſtined for the Service of the *Iris* in and about the Optic Nerve, it does not ſeem to carry any greater Weight than the Preceeding, for all that it proves is, that the Nerves of the *Iris*, in thei Paſſage by the Optic Nerve, muſt be affected when the Optic Nerve is ; and that theſ Nerves deſtined for the *Iris* in their Paſſag by the Optic Nerve, cannot be affected fro the ſame Cauſe, I mean, that of the Diſtention of the Arteries, without equally affecting the Fibres of the Optic Nerves ; admit this to be true, we cannot pretend to ſay, that the Nerves of the *Iris*, together with thoſe Nerves, from whence they are continued in the *Choroïdes*, cannot be affected from any other Cauſe, without equally being accompany'd with the ſame Defect of the Fibres of the Optic Nerve and *Retina* ; for if it be allowed that the *Retina* and Optic Nerve, may become defective from ſome Defect in the Brain, without compreſſing the Nerves of the *Choroïdes*, neither in their Extremities, nor in their Paſſage by the Optic Nerve, by which they pretend to prove how the *Pupil* preſerves its Movements, when the *Retina* is inſenſible : We muſt equally allow, that theſe Nerves of the *Choroïdes* and *Iris*, may in like Manner become defective, from ſome Defects in the Brain without influencing the Optic Nerve, or its Extremities in the *Retina* ; and if this be allowed, all that has been ſaid as to this Argument, can have no Force in Favour of the *Retina* ; becauſe then we may account how the *Choroïdes* being the imme-

diate

How the *Pupil* preſerves it's Motions when the immediate Organ of Sight is inſenſible.

diate Organ of Sight, may become defective, and accompanied with the ſame Alterations of the *Pupil*, leaving only the Difficulty to get over, how the *Pupil* preſerves it's Movements when the immediate Organ of Sight is inſenſible; and even this, (tho' perhaps the ſtrongeſt Argument that has been urged in Favour of the *Retina*) may be removed, if we conſider that all theſe Caſes evidently come from a Defect in the Brain, and that there may be a Defect in the Brain, which, though the Nerves of the immediate Organ of Sight may have their healthful Perfection, may notwithſtanding hinder the Idea of the Object, when impreſſed on the *Choroïdes*, being tranſmitted to the Mind; and that this may happen is evident, if we conſider that it is not the Painting the Picture on the immediate Organ of Sight that is the Cauſe of Viſion; for even in a dead Eye, we find the Picture diſtinctly painted; but it is a certain Perfection that the Brain is in to receive ſuch Impreſſions; for in fact, it is the Mind that ſees, and not the Eye: And therefore, whether the *Retina* or *Choroïdes*, is the immediate Organ of Sight, they may both have their healthful Supplies, and even their healthful Perfection, and yet from ſome Impediment in the Brain, (without determining what this Impediment is) the Idea of the Image may not be tranſmitted to the Mind, ſince the Brain, in which the Power of forming ſuch Ideas is undoubtedly ſeated, is thus render'd unable to anſwer the End deſigned by it: Thus nothing can be proved more from this Argument in Favour of the *Retina*, than of the *Choroïdes*.

Inſenſibility of the *Choroïdes* from Wounds, makes no more for the *Retina* than the *Choroïdes*

WHAT has been ſaid, relating to the Inſenſibility of the *Choroïdes*, from Wounds made in the Globe and *Choroïdes*, can be no more an Argument in Favour of the *Retina*, than the *Choroïdes*; for with Reſpect to the Argument that has been given in Favour of the *Retina*, being the immediate Organ of Sight, from the Loſs of Sight conſequent on a Wound made in the Nerves, deſigned for the Service of the *Iris*, in their Paſſage in or about the Horizontal Line of the Globe; from the *Retina* being independent on the *Choroïdes*; and more ſo, from this Wound being attended with no Inflammation, wherein this Loſs of Sight is ſuppoſed to be owing to the Blood Veſſels in and about the Optic-Nerve, and continued to the *Retina*: It may be anſwered;—That were this true, the Variety of Bleedings, that are always directed on theſe Occaſions, muſt neceſſarily prevent the Loſs of Sight; and ſince neither the Pain is alleviated by ſuch Bleedings, nor the Sight preſerved, it is demonſtrable, that the Loſs of Sight cannot be owing, to this Cauſe: Whereas allowing the *Choroïdes* to be the immediate Organ of

Sight, we may eaſily account how the Brain may be affected in or about the Origin of the Nerves thus wounded; and how the Extremities of theſe Nerves in the *Iris*, together with thoſe continued in the *Choroïdes* may become inſenſible, and alſo how it happens, that this Pain of the Head and Globe immediately ceaſes, when the *Pupil* becomes immoveable, and the Eye no longer ſenſible of Light.

Anſwer to the Argument drawn from the Senſibility of the Nerves which give Movement to the *Pupil* in the *Gutta Serena.*

As to that Argument in Favour of the *Retina*, (which perhaps is the ſtrongeſt of any offered,) taken from the Nerves deſigned for the Movements of the *Pupil*, when thoſe of the immediate Organ of Sight are become quite inſenſible, and concluding from thence that the *Choroïdes* cannot be that Organ, from the Nerves of the *Iris* being continued from the *Choroïdes*, and from the *Retina* having no Communication with them; this proves nothing more in Favour of the *Retina* than the *Choroïdes*, for ſince we cannot trace the Image of the Object beyond the Impreſſion made on the immediate Organ of Sight, becauſe we know nothing of the Manner in which it is conveyed to the Mind; it follows, that the Nerves of the immediate Organ of Sight may (for what we know) retain their Senſibility, and yet the Brain from ſome unknown Defect, may be in a State improper for the Reception of the Ideas: And this will be further confirmed, if we conſider thoſe two Species of the *Gutta Serena*, where the *Pupil* retains its Mobility, which are the Effects, the one of a Dropſy, the other of an immediate Diminution of the Blood. For in the former Caſe, there muſt be an extraordinary *Plethora* in the *Cranium*; or in other Words, all the Brain continued from the Surface of the dropſical Humour in the *Cranium* muſt ſuffer Preſſure; and yet (what is very ſurprizing) we find Perſons affected with this Diſeaſe ſtill retain their Reaſon; and all the Nerves continued from the Brain to other Parts of the Body, remain in their healthful Perfection; all which ſeems to prove, that the Nerves of the immediate Organ of Sight, do not, any more than any other Nerves, ſuffer from the Alteration of the Brain, notwithſtanding the Loſs of Viſion which enſues, but that this Loſs is not for Want of the Nerves maintaining their healthful Perfection, but it proceeds from the Brain's being in a State incapable of receiving the Idea of ſuch Impreſſion.

Gutta Serena from a Dropſy in the Head.

Gutta Serena from a too great Diminution of Blood.

WITH Regard to that Diſeaſe which is the Effect of an immoderate Diminution of the Blood, this does not proceed as in the Caſe of the Hydrops, from any Alteration in the Brain occaſioned by Compreſſion, but from a quite contrary Cauſe; which makes it plain, that the Defect here muſt be univerſal; whence it follows, that the

Nerves of the *Retina* cannot be ſuppoſed to be affected in particular, from an univerſal Cauſe, any more than any of the other Nerves; and conſequently the Deprivation of Sight cannot proceed from any Defect in theſe Nerves, but from the Brain's being in a State (as has been already ſaid) incapable of receiving the Idea of the Object, whence it is plain, we can conclude no more from this Argument in Favour of the *Retina*, than what will be equally valid in Favour of the *Choroïdes*.

Uſe of the *Retina*.

UPON the whole, if it appears from hence that the *Choroïdes* be the immediate Organ of Sight, it follows, that the Uſe of the *Retina*, is to modify the Rays of Light in ſuch a Manner, as that they ſhall not paſs with too much Violence, for the Perfection of Viſion in Man and certain Animals: But in thoſe Animals whoſe *Choroïdes* is coloured, the Uſe of the *Retina* is not only for the Modification of theſe Rays of Light, but alſo to render the Sight of ſuch Objects as are neceſſary to their Conſervation, more perfect. In a Word, the *Retina* may be ſaid to be with Reſpect to the *Choroïdes*, what the *Epiderma* is to the interior Skin, for as the *Cuticula* or inner Skin, and not the *Epiderma* or *Cutis*, is the immediate Organ of Senſation; ſo the *Choroïdes* and not the *Retina* is the immediate Organ of Sight.

I ſhall refer the Determination of this Controverſy, to the Reader's own Judgment, and only recommend to his Obſervation, before he pronounces on either Side the Queſtion, the following Queries in Favour of the *Choroïdes.*

QUERIES.

I.

WHETHER the *Retina* being an Expanſion of the Optic Nerve and Nerves, the Inſtrument of all Senſation be an Argument ſufficient to make us conclude that the *Retina* is the immediate Organ of Sight?

II.

Whether, tho' the *Choroïdes* is not ſo nervous as the *Retina* it may not be ſufficiently nervous for Viſion?

III.

Whether, if it were neceſſary that the immediate Organ of Sight ſhould be nervous in all its Parts, the *Retina* be not, on Account of its Arteries, as incapable of being that Organ as the *Choroïdes?*

IV.

Whether the Nerves that are inſtrumental to the Movements of the *Pupil*, are not a Continuation of thoſe of the immediate Organ of Sight?

V.

Whether the Change of the *Pupil*, from the Action of Light, be not a Proof of this Continuation?

VI.

Whether the Sympathy obſervable in certain Species of the *Gutta Serena*, between the Nerves of the *Pupil* and thoſe of the immediate Organ of Sight, be not a further Proof of the ſame thing?

VII.

Whether the Continuation of thoſe Nerves be not further proved from the Immobility of the *Pupil*, which ſo certainly follows the Inſenſibility of the immediate Organ of Sight?

VIII.

Whether the *Pupil* retaining its Mobility in other Species of the *Gutta Serena*, be any Objection againſt thoſe Nerves bein thus continued, for is it not poſſible that th Nerves of the immediate Organ of Sigh may retain their natural Senſibility, and ye from ſome Defect of the Brain, the Idea o the Object may not be communicated to th Mind?

IX.

Whether this be not confirmed from theſe Species of the *Gutta Serena*, where the Eye is entirely blind, and yet the Mobility of the *Pupil* may be produced either by Friction or the Action of Light, or both ?

X.

Whether if this be granted, we may not reaſonably admit the *Choroïdes* to be the immediate Organ of Sight; tho' in theſe Caſes the Idea of the Object may not be conveyed to the Mind ?

XI.

Whether our Power of voluntarily dilating the *Pupil* in any Degree of Light leſs than the ordinary be not another Proof that theſe Nerves are ſo continued ?

XII.

Whether our Want of Power of voluntarily dilating the *Pupil* in any Degree of Light greater than the ordinary, be not another Argument for the ſame Thing?

XIII.

Whether that particular Species of the *Gutta Serena*, which affects only one Eye, where, when the well Eye is cloſed, the *Pupil* of the diſeaſed Eye remains dilated, and immediately on the opening the well Eye contracts to its natural Diameter, be not a further Proof of this Communication?

XIV.

Whether that painful Senſation ariſing from the Action of Light in certain Inflammations be not a further Proof of this Matter?

XV.

Whether the Increaſe of this Pain in a greater Degree of Light, and the Decreaſe of it in a leſſer Degree and the intire Ceſſaſion of it immediately on the Abſence of the Light, do not all confirm the ſame Thing?

XVI.

Whether the Pain ariſing from the Action of Light in theſe Inflammations be owing o the Effect of Light on the Nerves of the mmediate Organ of Sight, or be the Conſequence of that effect on the Nerves the *Iris*?

XVII.

Whether the latter be not more probable ſince the Diſtention of the Arteries of th *Iris* hinders that Motion of the *Pupi* which in a healthful Eye would always happen to admit a determined Degree of Light

XVIII.

Whether if this be granted, it be not another Argument to prove the Communication abovementioned?

XIX.

Whether going ſuddenly out of a dark Place into a great Light be not a further Proof of this Communication; ſince the *Pupil* dilated in the Dark for the Reception of ſome Light, cannot contract with Velocity ſufficient to hinder the Light paſſing to a greater Degree?

XX.

Whether, if it be from hence granted, that there is a Communication between the Nerves of the immediate Organ of Sight, and thoſe which give Movements to the *Pupil*, it be not a plain Proof that the

Retina cannot be that Organ, ſince its Nerves have no ſuch Communication ?

XXI.

Whether the well known Inſenſibility of he Optic Nerve immediately after its Enrance into the Globe be not a Proof that ts Expanſion, the *Retina* cannot be the nmediate Organ of Sight ?

XXII.

Whether the Number of Blood Veſſels, hich are ſaid to enter with the Optic erve into the Globe, can be ſufficient to acunt for its Inſenſibility ; ſince there are ıny Parts of the Optic Nerve expoſed to ght immediately on its Entrance, and yet eſe Parts are likewiſe inſenſible ?

XXIII.

Whether the wounding the *Retina* in the eration of *Couching*, without any Diſadntage following, be not a further Argunt for this Inſenſibility, ſince to wound a rve of equal Thickneſs with the *Retina* in other Part of the Body is always attend- with dangerous Conſequences ?

XXIV.

Whether on the contrary, the wounding Nerves of the *Choroïdes* deſigned for the

Service of the *Iris* in their Paſſage in or bout the Horizontal Line of the Globe, b ing attended with Pain, Immobility of t *Pupil* and Loſs of Viſion ; be not a ve cogent Argument that the *Choroïdes* is t immediate Organ of Sight ?

XXV.

Whether the *Pupil* loſing its Mobili and the Eye its Senſation of Light, in exact Proportion to the Degree and Durati of this Pain ; and the one becoming i moveable, and the other inſenſible imm diately on the Ceſſation of the Pain, be r a further Confirmation of the ſame Thin

XXVI.

Whether the Pain on that Side of the H accompanying the Pain in the Eye, and one immediately ceaſing when the ot goes off, and the Eye becoming blind, d not ſtill corroborate this Matter ?

XXVII.

Whether the Inſenſibility of the Br obſervable on wounding it, be not a Pr of the Inſenſibility of the Optic Nerve, a conſequently of its Expanſion the *Retina*

XXVI

XXVIII.

Whether the Want of Communication
f the *Retina* with the Nerves of the *Iris*,
nd the Inſenſibility of the Optic Nerve, be
ot a joint Demonſtration that the *Retina*
annot be the immediate Organ of Sight?

XXIX.

Whether the Communication demonſtra-
e between the Nerves of the immediate
rgan of Sight in one Eye, and thoſe of
at Organ in the other, be not an Argu-
ent at leaſt equally as valid in Favour of
e *Choroïdes* as the *Retina*?

XXX.

Whether on the contrary, ſuppoſing the
tina to be the immediate Organ of Sight,
be not abſurd to imagine, that the Action
Light on the *Retina* can affect the
erves of the *Iris*, ſince they have no
ommunication one with the other?

XXXI.

Whether it be reaſonable to ſuppoſe, that
Retina can receieve the immediate and
tinct Impreſſion of the Object, and yet
mit the Light to paſs beyond it ſufficient
affect the Nerves of the *Choroïdes*?

XXXII.

Whether, if it be admitted, that the A
ction of Light on the *Retina* cannot affe
the Nerves of the *Iris*, or that ſufficien
Light paſſes beyond the *Retina* to affect th
Nerves of the *Choroïdes*, we may not henc
juſtly conclude, that the *Retina* cannot b
the immediate Organ of Sight?

XXXIII.

Whether, tho' the nervous Parts of th
Retina in a living Eye cannot be ſaid to b
perfectly pellucid, we may not neverthele
conclude from its allowed Tranſparency, tha
it cannot be the immediate Organ of Sight

XXXIV.

Whether the diſtinct Image of the Can
dle impreſſed on the *Choroïdes*, obſervabl
on removing the *Sclerotica* oppoſite to th
Axis of the Globe, be not a further Proo
that the *Retina* cannot be that Organ?

XXXV.

Whether our ſeeing the natural Colour
the *Choroïdes* at the bottom of the Globe i
a living Eye, by looking into its *Axis*, b
not a further Proof that the *Retina* is to
tranſparent to receive immediately the
mage of the Object?

XXXVI.

Whether the Picture of the Object in a Looking-Glaſs can be reaſonably ſaid to be reflected from the Glaſs itſelf, and not rather from the Silver or other Opacity behind it?

XXXVII.

Whether, if the latter be allowed, it be not an Argument that the *Retina* is to the *Choroïdes*, what the Glaſs is to the Opacity behind it?

XXXVIII.

Whether the Sight of the *Muſcæ Volantes*, which is known to be a Conſequence of a Diſtention of the Arteries of the *Retina*, be not an Argument againſt the *Retina*, ſince that Light which ſhould be tranſmitted to the *Choroïdes*, is intercepted by theſe diſtended Arteries, and the Sight rendered proportionably indiſtinct?

XXXIX.

Whether it be not erroneous to urge the ſame Argument in Favour of the *Retina*, ſince theſe Arteries being thus diſtended, muſt neceſſarily approach each other, and conſequently compreſs the intermediate Nerves, which Nerves muſt proportionably loſe their Senſibility, and if the *Retina* were the immediate Organ of Sight, it would follow, that the Points of theſe Objects thro' the *Muſcæ Volantes*, would be imperfect, which is directly contrary to Experience ?

XL.

Whether the Colour of the *Choroïdes*, or rather *Uvea* in Animals adapted to the Reception of ſuch Objects, as are more immediately neceſſary to their Preſervation, be not a Proof that this, and not the *Retina*, is the immediate Organ of Sight ?

XLI.

Whether the painful Senſation excited in theſe Animals by a certain Degree of Light, and their ſeeing Objects in leſs Light than Man, be not owing to the Colour of their *Choroïdes* or *Uvea* ?

XLII.

Whether if this be allowed, it does not follow, that as it is owing to the Light acting on the *Choroïdes*, the *Choroïdes* muſt be the immediate Organ of Sight ; ſince ſhould we ſuppoſe the *Retina* to be that Organ, the Light falling on both at one and the ſame Time, would but render the Sight of the object imperfect, whereas it is reaſonable to believe, that theſe Animals ſee Objects diſtinctly ?

XLIII.

Whether the Blackneſs of the *Choroïdes* in Man and ſome Animals, be not a further

Argument in Favour of the *Choroïdes*, ſince it is plain, that Man ſees with more Perfection, and in a greater Degree of Light than theſe Animals, whoſe *Choroïdes* is coloured; whereas if the Colour of the *Choroïdes* were an indifferent Thing, it is reaſonable to ſuppoſe, that Man, and theſe Animals, would ſee with equal Perfection?

XLIV.

Whether, if from what has been ſaid, it be granted, that the Colour of the *Choroïdes* is an Argument for its being the immediate Organ of Sight in other Animals, it be not equally valid when applied to Man?

XLV.

Whether, upon the whole, the Communication between the Nerves of the *Choroïdes*, and thoſe of the *Uvea* and *Iris*, and the Want of this Communication in the Nerves of the *Retina*, the Inſenſibility of the *Retina*, its Tranſparency, and the Effects of the Colour of the *Choroïdes* in Animals, being all allow'd, they do not amount almoſt to a Demonſtration, that the *Choroïdes*, and not the *Retina*, is the immediate Organ of Sight?

FINIS.

POSTSCRIPT.

HAVING finiſh'd what I had to offer concerning this long controverted Queſtion, I thought, it would not be improper, in order to corroborate the Arguments alledged in Favour of the *Choroïdes*, to mention a few Inſtances of Succeſs in ſome extraordinary Caſes, which have lately fallen under my Treatment, where the immediate Organ of Sight was affected in ſuch a Manner, that the Patient laboured under a total Deprivation of Viſion for many Years, and now enjoys Sight to a great Perfection ; which Succeſs (in my Opinion) could not have happen'd but upon the Suppoſition that the *Choroïdes* and not the *Retina* is that Organ.

Mr. *Croſbie*, of *Briſtol*.
Mr. *Hammond*, in *Kirby-Street*, *Hatton-Garden*.
Mr. *Buſhell*, at *Woolwich*.
Mrs. *Hooper*, of *Tunbridge*.
Mr. *Wilſon*, in *Caſtle-Street*, *Bloomſbury*.
Mr. *Buckle*'s Daughter in *Tidmarſh*, near *Reading*.
Mrs. *Maria*, in *Steward-ſtreet*, *Spittle-Fields*.
Mr. *Price*, on the Pavement at *Tottenham-Court*.
Mrs. *Mulleroe*, *Slaughter's-Street*, *Spittle-Fields*.
Mrs. *Newman*, of *Blackwall*.
Mrs. *Robinſon*, next to *Aldgate-School*, *Eaſt-Smithfield*.
Mr. *Marcy*, at the Sign of Biſhop *Blaze*, *High-ſtreet*, *Holborn*.

As the precedent Queſtion is the Subſtance of an Introductory Lecture, to a Courſe on the Diſeaſes of the immediate Organ of Sight, I judged it not improper to affix the following Catalogue of ſuch Authors as have treated on the Defects of that Organ and other Diſeaſes incident to the Eyes, and whoſe Writings are occaſionally cited and examined by me in the Order of my Lectures, of which I intend a Continuation this enſuing Winter.

The ſeveral Writings on the Diſeaſes of the Eye, of *Hippocrates*, *Galen*, *Celſus* and *Ægineta*.

1 Ophtalmographia Plempii de oculi fabrica, 8vo. *Amſt.* 1632
2 Jacobus Hovius de circulari humorum motu in oculis, 8vo. *L. Bat.* 1716
3 Antonii Nuchii Sialographia, & ductuum aquoſorum anatomia, *Lugd. Bat.* 1690 in 8vo.
4 Deſcription méchanique de l'œil, démontrée par M. Wolcham, *Norimb.* in 4to.
5 Mechaniſme de l'œil par M. Wolichain, *Dreſd.*
6 Buychius paſſim in operibus, ſpecialim in Epiſtolæ præ. de oculorum tunicis.
7 Schenchius Diſput. Dioptrico-Anatomicam habuit de oculo *Jenæ*, 1654. & aliam de ophthalmia, 1667. utrumque in 4to. Item in Obſervat. medicinal. in fol. libro primo de oculis multa inſeruit.
8 Puget obſervationes plures de ſtructurâ oculorum in diverſis inſectis deſcripſit in duabus Epiſtolis ad R. P. Lamy, &c. Linguâ Gallica, *Lugduni*, in 8vo. 1706.
9 Joan. Franc. Ripenſis Carmen de oculorum fabrica, *Willend.* fol.
10 Michael (Joan.) oculi fabrica, uſus, *Ludg.* in 8vo.

11 Joan. Jacob. Rea, epiſtolæ de fabrica oculi ad Boerhavium *Genev.* in 8vo.

12 Meibomius epiſtolam exaravit Langelottio inſcriptam, de vaſis palpebrarum novis 1666. in 4to. Idem tùm diſputationem Medicam ſuſtinuit, de ſuffuſione 1670. tùm exercitationem medicam de fluxu humorum ad oculos naturali & preternaturali 1687. omnia in 4to. *Helmſtadii.*

13 Joannes Baptiſta Carcanus Anatomiæ Profeſſor publ. typis donavit libellum, in quo de muſculis palpebrarum atque oculorum tractatur, *Ticini,* in 8vo. 1574.

14 Nicolaus Steno, (Danus) evulgavit obſervationes ſuas anatomicas de glandulis oculorum, & novis earundem vaſis 1664. in 4to. *Haffniæ,* quæ ſunt denuò excuſæ *Lugduni Batav.* in 12mo. 1680.

15 Nicolai Stenonis obſervationes Anatomicæ de variis oris, narium, oculorum, lacrimarum fontibus, &c. autore Belzio *Ludg. Bat.* 1680. in 12mo

16 Chroüet (Warnerus) de tribus humoribus oculi, *Leodii,* 1691 in 8vo

17 Dorſtenii exercitatio anatomica de oculo, *Marburgi Cattorum,* 1687. in 4to.

18 Manfredus (Paulus) Dr. Medicus Romanus, novas obſervationes circa oculi uveam & circa aurem, Romæ in publicum protulit, in 4to. 1674.

19 Biauchri (Joan. Baptiſtæ) ductus lacrimalis novis, *Auguſt. Taurinorum,* 1715. in 4to.

20 Nicolai Severi obſervationes anatomicæ de glandulis oculorum *Hoffn.* in 8vo.

21 Mappus diſcurſum de riſu & fletu edidit, 1684. & diſſertationem anatomicam de oculi humani partibus & uſu, 1677. utrumque, *Argentorati.*

22 Joan. de Burges, de pupilla oculi, in 8vo.

23 Simon Portius (Neapolitanus) libellum trivialem emiſit de coloribus oculorum, Florentiæ impreſſum, 1550. in 4to.

24 Cochii, (Antonii) de lente criſtallina, *Romæ,* in 8vo.

25 Waldſchmied (Wilhelmus Huldericus) humoris vitrei in oculo ſtructuram ſingularem conflari reperit ex innumeris parallelopipedis ſibi invicem appoſitis, &c.

26 Burrhus (Franciſc. Joſeph. Burrhus,) epiſtolam de artificio oculorum humores reſtaurandi ſcripſit ad Thomam Bartholinum, *Hafniæ,* in 4to. 1669.

27 Joan. Baptiſta Verte, anatomia artificialis oculi, *Amſt.* 1680. in 12mo.

8 Schaper de lippitudine criſtalliferâ epiſtola, &c. *Roſtochii*, 1704. in 4to. Ejuſdem diſſertatio epiſtolica de Hydrophtalmiâ interceptâ, *Roſtochii* 1713.

9 Bſcherer Doctor Medicus Norimbergæ edidit linguâ Germanicâ demonſtrationem OEconomicam & deſcriptionem Anatomicam oculi ſui artificialis, quem Stephannus Ziken, Tornator celebris excogitavit, & fabricavit Norimbergæ, legitur etiam brevior hujus oculi Tornatilis deſcriptio latinè in Ephemeridibus naturæ curioſorum Germaniæ, anni 1700. obſervat *220* pag. 398.

30 Conſtantinus Nerobus de nervo optico, *Francof.* 1691. in 8vo.

31 Mercurialis Forolivienſis de oculorum affectibus prælectiones in 4to. reperiuntur inter cætera ejuſdem Profeſſoris opera medica. Hujuſce etiam Authoris extant litteræ de nervis opticis ad conſtantium Varolium, in 4to. *Francofurti*, cum ejuſdem Varolii litteris.

2 Extat Joannis Michaelii J. F. Hornani oculi fabrica, actio, uſus, &c. in 8vo. *Lugd. Bat.* 1695. libellus perperam ſcriptus.

3 Conſtantius Varolius (Medicus Bononienſis) de nervis opticis, &c. ad Hyeronimum Mercurialem, in 8vo. *Francofurto*, 1692.

4 Iſoardus Guigonius Philoſophiæ & Medicinæ Doctor & Chirurgiæ Anatomiæque Profeſſor Ordinarius typis excudi juſſit tractatum de oculo, in 4to. cui titulus —— Authopſiomma, cum ejuſdem oculi actionibus & utilitatibus, *Taurini*, 1619.

5 Sturmii Diſſertatio Phyſica de Viſionis organo & ratione genuina, &c. in 4to. *Altdorffi*, 1678. Idem ibidem ſuſtinuit Viſionis ſenſum eſſe nobiliſſimum, &c. 1699. in 4to.

6 Diſcours de la conſervation & de l'excellence de la vûë, &c. par André du Laurent (premier Medecin du Roy Henry IV.) à *Rouen*, in 12mo. 1615. Extat etiam hic liber Anglicè traductus ex priore editione Gallica à Surphlet, *Londini*, in 4to 1599. hunc etiam Joannes-Theodorus Schonlinus latinè edidit, ſub titulo: Diſcurſus de viſûs nobilitate ejuſque per diætam conſervandi verâ methodo, &c. in 12mo. 1618. *Monachii.* Idem Dominus Andræas Laurentius in anatom. lib. 11. (de ſenſuum organis plurima de oculo ediſſerit.

7 Caranta (Cuneas) Doctor Medicus & Philoſophus, librum ſuum de natura Viſionis, &c. edidit *Saviliani*, in 4to. 1623.

8 Petit 1°. Sa lettre dans laquelle il démontre que le criſtallin eſt fort près de l'uvée.

2°. —Sa lettre contenant des réflexions ſur ce que M. Hequet a dit dans ſes Remarques ſur l'utilitè de la Saignée dans les maladies des yeux.

3°. — Sur les deux eſpeces que l'humeur aqueuſe occupe dans l'æil & ſur le criſtalin & ſur la cataracte. *V.* l'Hiſtoire de l'Academie Royale des Sciences pour les années 1722, 23, 25, 28, 30.

39 Auguſtini Quirini Rivini Diſputatio Phyſiologica de Viſu, *Lipſiæ*, 1686.

40 Ruſchius, (Joan. Baptiſta) de Viſûs organo, *Pariſ.* in 4to.

41 Profeſſor Hetruſcus, ſcilicet Joannes-Baptiſta Ruſchius in Piſano Gymnaſio Profeſſor, qui ſcripſit de Viſûs organo libros quatuor, in 4to.

42 Lettres de M. Mariotte à M. Pecquet, &c. *& viciſſim* ſur l'organe de la vûë, jointe à la deſcription Anatomique des divers animaux.

43 Mariotte (Dominus Mariotte Abbas, &c.) novum ſuum de viſione invintum typis mandavit in litteris ad Dominum Pecquet inſcriptis. Reſponſum vero Domini Pecquet unà ſimul impreſſum fuit in 4to. *Pariſ.* inter Ephemerid. Eruditorum Galliæ.

44 Memoire de la ſocieté d'Edimbourg, en Anglois, 1636.

45 Penipii Ophtalmographia —— Lorain, fol.

46 Georgius Bartiſch Ophtalmographia, *Dreſd.* fol.

47 Jacobi Scillingi ophtalmia, ſeu de oculorum naturâ morbis & remediis, *Augentreſ.* 1615. in 4to. Allamand & Latin.

48 Graphei ars probata de oculorum affectibus, *Venet.* fol.

49 Heiſterius Theſim quamdam Harderovici Doctorandus imprimi curavit de tunicâ Choroida, 1708, in 4to.

50 Heiſterius de Cataracta Glaucomate amouroſi, &c. *Altdorff*, 1713. in 8vo.

51 Heiſterii apologia uberior explicatio ſyſtematis, contra Woolhouſii ocularii Pariſienſis cavillationes & objectiones, itemque Pariſienſis eruditor, &c. in 8vo.

52 Heiſterii hiſt. de fiſtulâ lacrimali, *German.* in 4to. 1716.

53 Gaſtaldi quæſtio Medico-Ghirurgica, &c. ſub hac verborum ſerie, an cataracta à vitio humoris aquei aut criſtallini oriatur, &c.

54 Pinſon, ſes obſervations ſur la Cataracte & le Glaucome.

55 Geiſter, ſa lettre écrite à Nuremberg ſur la cataracte.

56 Fryſtag. diſſertatio Medica de cataracta, &c.

57 Menavii (Frederic.) Elenchus affectuum ocularium, *Regiomonti*, in 4to.

58 Horn, de Ophtalmiâ diſſertatio, *Wittembergæ*, in 4to. 1677.

59 Georgius Bartiſch Linguâ Germaniæ vernaculâ codicem in lucem edidit, cui titulus eſt Augendienſt, id eſt oculorum ſervitium, aut miniſterium. Hunc vero Authores vulgò citant ſub nomine Ophtalmodouliæ; ſed librum iſtum nuſquam

in ſermonem Latinum traductum fuiſſe accepimus. Bis autem prælo exivit, primùm in fol. rurſus in 4to. *Nurembergæ* 1686.

0 Benevenutus Graſſus Hyeroſolymitanus Dr. Medicus celeberrimus & expertiſſimus de òculis eorumque ægritudinibus & curis, liber in 4to. & in fol. Venetiis, 1500.

1 Hearnius (Joh) de morbis oculorum, aurium &c. *Lugdun.* in 4to.

2 Gothofredus Berger diſſeruit de oculorum morbis, *Wittembergæ*, 1698. in 4to.

3 Jacobus Schallingius librum emiſit in fol. Francofurti, 1615. Ophtalmia ſive diſquiſitio Hermetico-Galenica de naturâ oculorum Latinè & Germanicè. Schallingius autem Philoſophus erat inter Roſi-Crucios Adepti gradum nactus.

4 Hambergerus (Mathem. Profeſſor Ordinarius) Jenæ publici Juris fecit optica oculorum vitia, in 4to. 1696. opus valde ſelectum & laudabile.

5 Sebizius diſputationem ſolemnem Medicam habuit de Ophtalmiâ, *Argentorati* in 4to. 1662. Idem Joannes Albertus Sebizius in exercitationibus pathologicis *Argentorati*, 1674. in 8vo. impreſſis multa eruditè & ſecundùm experientias optimas de oculis diſſeruit.

6 Joannis Ott, cogitationes Phyſico-Mechanicæ de naturâ viſionis, *Heidelbergæ*, 1660. diſſeruit etiam de propriorum oculorum defectibus, 1671. *Baſileæ*, in 4to.

7 Friderici, diſputatio medica de ſuffuſione, Jenæ 1670. in 4to.

8 Salzmannus publico examine ſubmiſit Theſim de viſûs obſcuritate in genere & ſpecie. *Argentorati*, 1521. in 4to.

9 Gabrielis Fallopii (Mutrinenſis) tractatus de Vulneribus oculorum, in 4to, *Venetiis*. 1569.

0 Gellii diſputatio Medica de internis oculorum affectibus. *Baſiliæ*, in 4to. 1613.

1 George Wolffgangus Wedelius a mis au jour les huit diſſertations qui ſuivent.

Primo. *Diſputatio medica de Ophtalmiâ*, 1684. *Jenæ, in* 4*to.*
Secundo. *Diſſertatio medica de Ægylope*, 1695. *Jenæ, in* 4*to.*
Tertio. *Viſum phyſiologicè examinandum proponit in theſi, in* 4*to.* 1674.
Quarto. *Diſſertatio medica de Amauroſi*, 1705.
Quinto. *Diſſertatio medica de Nyctalopiâ*, 1693.
Sexto. *Diſſertatio medica de Ophtalmiâ ex Epitome praxeos Clinicæ Georgii Wolffgangii Wedelii*, 1713.
Septimo. *Diſſertatio medica de viſûs imbecillitate & defectibus*, 1714.
Octavo. *Diſſertatio medica de Cataractâ*, 1706.

72 Heurnius (Joannis Heurnii Ultrajectini in Academiâ Leiden Prof. Med.) Tractatus de morbis oculorum, &c. 1611. i 4to. *Lugdun. Batavor.* Idem in fol.

73 Palfin, des Maladies des yeux, en Hollandois.

74 Stahl diſputationem Medicam ſuſtinuit de affectibus oculorun in genere, Halæ Magdeburgicæ, 1702. cui annectitur eju propempticon inaugurale de fiſtulâ lacrimali. Ibi vero videbi candidus Lector quod ipſi Stahlio plerumque debetur nov Anelli methodus de fiſtulâ lacrimali, &c. Vid. numero, 84.

75 Rolfincius de Guttâ ſerenâ, in 4to. *Jenæ,* 1669.

76 Trinckhuſius compoſuit diſſertatiunculam de cœcis ſapientiâ & eruditione claris, &c. *Jenæ,* in 4to. 1672.

77 Gruhlmanni Specimen Medicum de novo contra oculorun caliginem remedio tanquam ſpecifico ſcilicet Hermariâ, &c *Jenæ,* 1706. in 4to.

78 Hardſocher (Nicolaus) Eſſai de dioptrique avec une diſſertation ſur les diſſertations ſur les différens accidens de la vûë.

79 De la Hire, Diſſertatio de viſu & variis ejus caſibus, *Lut. Paris.* 1694.

80 Joan. Manelphus de fletu & lacrimis, *Romæ,* 1617.

81 Guillemeau Jac. Traité des maladies de l'œil, *Pariſ.* in 8vo.

82 Paulus Venetus plerumque laudatur ab Eruditis pro obſervatore primo motûs alterni in pupillâ, ſcilicet Dilatationis & Conſtrictionis, &c.

83 Antonii Menjoti Diſceptationes Pathologicæ, in 4to. *Pariſ.* 1672. ubi duæ extant diſſertationes, ſcilicet de dilatatione & anguſtia pupillæ.

84 Vater de viſionis læſionibus, in ſpecie in Mydriaſi & Myoſi, &c. *Wittemb.* 1706. in 4to. Secunda diſſertatio de Trachomate, *Wittemb.* 1704. Tertia Idem ibidem de ſuffuſione oculorum. 1705.

85 Hoppii Diſſertatio Medica de palpebris, illarumque affectibus, *Baſiliæ,* 1705. Novus hic Author ſæpius Woolhouſium laudat; Plurimi vero deſiderantur palpebrarum affectus, quos Hoppius forſitan de propoſito omiſit.

86 Hecquet, ſur l'utilité de la ſaigneé dans les maladies des yeux. *Paris.* in 12mo.

87 Hecquet, ſa Lettre miſe à la fin d'un Traité de la digeſtion & des maladies de l'eſtomac. *Paris.* in 12mo.

88 M. Morand, ſes Obſervations ſur les cataractes, dans l'Hiſtoire de l'Académie Royale des Siences de l'année, 1722.

89 Woolhouſe, 1°. ſes Diſſertations ſcavantes & critiques ſur la cataracte & le glaucome.

2°.

2° Ses Obſervations ſur le Mémoire Académique de M. Marchand.

3° Son Mémoire dans le Journal des Scavans, Décembre, 1720.

90 Antoine Maître Jean, Traité des maladies des yeux. *Troyes*, 1707. in 4to.

91 S. Ives, des maladies des yeux *Paris*, 1722. in 8vo.

92 Briſſeau, Traité de la cataracte & du glaucome, *Paris.* 1709. in 12mo.

93 Petri Petiti Medici Pariſienſis de lacrimis, libri, 3. *Paris.* 1641. in 12mo.

94 Barruffaldi diſſertatio, cui accedit alia de fiſtula lacrimali, en Italien, *Venice.* 1717.

95 Dominiq. Anel, ſur la découverte de l'hydropiſie du conduit lacrimal, *Paris*, 1716. in 12mo.

96 Suite de la nouvelle méthode pour guérir la fiſtule lacrimale, *Turin.* in 4to.

97 Dedier, ſa Lettre écrite à M. Woolhouſe, &c. *vid.* Journal des Scavans pour le mois de Juillet, 1722.

98 Dubois, ſuite des maladies chroniques, v. 5.

99 Hiſt. Acad. Reg. Scient. in tranſact. Anglicanis.

100 Mémoire de la Societé d'Edimbourg, en Anglois, 1736. *Lond.* in 8vo.

101 Guillelmi Briggos Ophtalmographia, *Ludg. Bat.* 1668. in 12mo.

102 Traité des maladies de l'œil, en Anglois, par Richard Baniſtre, *Londre.* in 12mo.

103 Ophalmiotria, ſeu oculorum medela à Guill. Couard, medico Londinenſi, *London*, 1706, in 8vo.

104 Ophalmographia en Anglois par Kennedi, *Londre*, in 8vo. 1714.

105 Traité des maladies de l'œil, en Anglois, par Guillaume Read. *Lond.* in 8vo.

106 Heiſter's Syſtem of Surgery, 1742.

BOOKS, *Publiſh'd by the* AUTHOR *Himſelf.*

1 AN Account of the Mechaniſm of the Eye, *Oactv* *Engliſh, printed in the Year,* 1727.
2 A Treatiſe on the Diſeaſes of the immediate Organ o Sight, *Octavo, French,* 1734.
3 A Treatiſe on the Diſeaſes of the Chryſtalline Humour *Octavo, Engliſh,* 1736.
4 A Treatiſe on the Make and Beauties of the Eye, with Figures, *Octavo, French,* 1737.
5 The ſame tranſlated into *Spaniſh, Octavo,* 1739.
6 An Eſſay on the Actions of the Muſcles of the Globe of th Eye, *Portugueſe,* 1740.
7 An Account of the Caſe of the Eye, and Recovery o the eldeſt Son of the Treaſurer of the King of *Portugal, Octavo,* 1741.
8 His *French* Treatiſe on the Make and Beauties of the Eye, *Portugal,* 1740.
9 An Account of the extraordinary Caſe and Recovery to Sight of the Eye of *Don A. de Saldania,* late Viceroy of the *Indies,* treated by him in *Portugal, Octavo,* 1741.
10 A Treatiſe on the Anatomy of the Globe of the Eye, with Figures, *Octavo, Engliſh,* 1742.
11 A Syllabus of a Courſe of Lectures, with a Diſcription o all the Diſeaſes of the Eye, *Octavo, Latin,* 1743.